

Amendment Dated June 17, 2008
Serial No. 10/616,621

REMARKS

Reconsideration of the rejections set forth in the Office Action is respectfully requested. By this amendment, claims 1-2, 4-5, 8-9, 14, 16-21, and 24 have been amended and new claim 28 has been presented. Currently, claims 1-5, 8-21, 24-25, and 27-28 are pending in this application.

Objection to the claims

The Examiner objected to claims 2 for minor informalities. Applicants have amended claim 2 to overcome this objection and request that it be withdrawn.

Rejections under 35 USC 102 and 35 USC 103

Claims 1-14, 17-20, and 24-25 and 27 were rejected under 35 USC 102 as anticipated by Balay (U.S. Patent No. 7,116,665). Claim 15 was rejected under 35 USC 103 as unpatentable over Balay in view of Shen (U.S. Patent No. 6,907,039). These rejections are respectfully traversed in view of the amendments to the claims and the following arguments.

This application relates to a way for exchanging routing information between differently configured VPN sites, so that a VPN site that is using a VR-based VPN model may be interconnected with a VPN site that is using a VRF-based VPN model (See Specification at page 3, lines 7-10). As described in the background section, there are two commonly used methods of establishing VPN tunnels on a network. (Specification at page 2, lines 8-9). A first VPN model is described in IETF RFC 2547, in which VPN routing and forwarding tables (VRFs) are used to store routing information. (Specification at page 2, lines 9-17). A second VPN model is based on the concept of a Virtual Router (VR). (Specification at page 2, lines 18-19). A virtual router is often implemented as software construct in a physical router which has all the attributes of a physical router, but which shares processor time, switch plane resources, and other physical resources of the physical router. (Specification at page 2, lines 19-21).

As noted by applicants at page 2, lines 27-30, both VR-based VPNs and VRF-based VPNs were widely deployed on existing communication networks at the time the application was filed. However, because of differences in the way in which they are constructed, the type of routing information used by the different models, and the manner in which the routing

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information was distributed in the different models, it was not easy to interconnect a VPN site operating a VRF-based VPN with a VPN site operating a VR based VPN.

Neither Balay, nor Shen, alone or in combination, teaches a way to interconnect a VR based VPN site with a VRF-based VPN site.

Balay teaches a system that will allow a single VRF to be used to implement multiple VPNs. (Balay at Col. 2, lines 39-41). To do this, Balay teaches that multiple VPN Routing and Protocol Modules (VRPs) may be created within a VRF (Balay at col. 4, lines 46-47 "Each VRP (e.g., 111 or 112) is associated with a single VPN from the VPN site 130"). The VRPs associated with the VRF all use a common FIB and RIB. Each VRP "provides the same functional interface to the BGP modules as expected by it from the RIB 113 or FIB 114. The VRP (e.g., 111 or 112), by updating the RIB 113 or FIB 114, enables the VRF 110 to receive VPN data from the CE 131 or the PE backbone 120." (Balay at Col. 4, lines 53-58).

Thus, it is clear that the VRF in Balay has several VRPs, each of which is associated with a separate VPN. The VRPs are not talking to each other and are not allowing information to be exchanged between the VPNs. Rather, the purpose of using separate VRPs is to allow multiple VPNs to be supported by a single VRF. This reduces the number of VRFs required to be implemented by a given PE by allowing, for example, one VRF to be supported per VPN site. (Balay at Col. 2, lines 35-44). Specifically, Balay realized that a given customer may need to have multiple VPNs established. Balay suggested using a single VRF so that a single interface channel could be used to connect to the customer's VPN site. Balay further teaches that multiple VRPs may be created within the VRF to allow multiple VPNs to be supported to that customer's VPN site over the single connection. Thus, Balay proposes a way for a single interface to be used to support different VPNs from a VPN site.

In rejecting the claims, the Examiner has taken the position that Balay teaches "processing network traffic between first and second VPN." Applicants respectfully submit that this is not how Balay operates. Balay does not transmit traffic between the VPNs. Rather, Balay implements VRPs specifically to keep the traffic for the different VPNs separate. Note, that Balay teaches that each VRP should be used to support only one VPN. This allows the traffic from that VPN to be separated from traffic from other VPNs that are also using the same VRF. If Balay was seeking to transmit traffic between VPNs, Balay wouldn't need to use a separate VRPs for each VPN.

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The Examiner has taken the position that Fig. 4 teaches receiving first routing information associated with a first VPN (citing box 410 of Fig. 4) and then has taken the position that Balay teaches receiving second routing information associated with the first VPN (citing box 412 of Fig. 4). There are several flaws in this rejection.

First, Fig. 4 of Balay is provided to show how data is being handled by the network element in Balay, not to describe how routing information is being handled. Since claim 1 recites "receiving ... first routing information" and "receiving... second routing information" Fig. 4 is not relevant to the claims.

Second, Fig. 4 clearly shows that step 410 shows receiving a first packet associated with a first VPN, and that step 412 shows receiving a second packet associated with a second VPN. Thus, Fig. 4 does not show receiving first and second packets that are associated with the same VPN. Rather, Fig. 4 shows that the same VRF can receive packets associated with different VPNs. Thus, for this additional reason, Fig. 4 of Balay is not relevant to claim 1.

The first step of claim 1 recites "receiving, by a network device, first routing information..., the first routing information being associated with a first VPN. The Examiner has cited Fig. 4 (box 410) and col. 8 lines 5-30 ("receiving a packet at the PE node associated with the first VPN. At step 420, fig. 4, the first data packet is associated with the first VRF"). Balay states, however, at Col. 8 lines 304 that Fig. 4 "illustrates a flow diagram of one method 400 for processing network traffic..." Thus, Balay is not using Fig. 4 to show how routing information is handled, but rather is using Fig. 4 to show how data is handled.

The second step of claim 1 recites receiving, by the network device, second routing information..., the second routing information also being associated with the first VPN. The Examiner has taken the position that this is shown by Balay at Fig. 4, step 412. As mentioned above, Fig. 4 is showing how data is being handled not how routing information is being handled. Moreover, and more fundamentally, the second step of this claim recites that the second routing information is also associated with the first VPN. Box 412 of Balay states that the second packet is "Associated with 2nd VPN" not the first VPN. Thus, this portion of Balay does not support the Examiner's position for this additional reason.

There is also another reason why Balay does not anticipate claim 1. Specifically, Balay does not teach or suggest a VPN implemented using both VR and VRF-based VPN models. Claim 1 recites "receiving, by a network device, first routing information from a Virtual Router

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(VR)-based VPN site implemented using a VR-based VPN model" (emphasis added). The Examiner has not addressed this limitation specifically, and has not explained how the cited portions of Balay relate to a VR-based VPN model. Rather, the Examiner has simply cited Fig. 4, col. 8, lines 5-30. These portions relate to receipt of data packets, and do not mention a VR-based VPN model. Accordingly, for this additional reason, applicants respectfully submit that Balay fails to anticipate claim 1.

Although the arguments have focused on claim 1, the other independent claims are likewise patentable over the art of record.

Conclusion

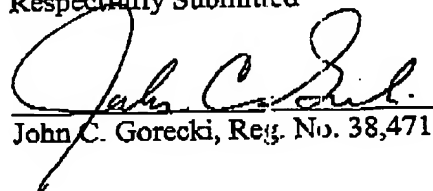
Applicants believe the claims as pending or amended are allowable over the art of record. However, if the Examiner is not of the same opinion, applicants would be very interested in talking with the Examiner to discuss the cited art and the claims to attempt to arrive at claims that the Examiner feels are of appropriate scope in view of the prior art. Accordingly, if the Examiner believes that the claims are unpatentable for any reason, the Examiner is invited to telephone the undersigned at the telephone number listed below to discuss this application. If the Examiner has any questions or concerns regarding the amendments or these remarks, the Examiner is also requested to contact the undersigned.

If any fees are due in connection with this filing, the Commissioner is hereby authorized to charge payment of the fees associated with this communication or credit any overpayment to Deposit Account No. 502246 (Ref: NN-15942).

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Anderson Gorecki & Manaras, LLP
P.O. Box 553
Carlisle, MA 01741
Tel: (978) 264-4001 x2337
Fax: (978) 264-9119

Respectfully Submitted


John C. Gorecki, Reg. No. 38,471